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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/594,596	05/25/2007	Tadahiro Ohmi	5016-0104PUS1	6865

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EXAMINER
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BOWMAN, ANDREW J

ART UNIT	PAPER NUMBER
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1711

NOTIFICATION DATE	DELIVERY MODE
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08/11/2010

ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

mailroom@bskb.com

<b>Office Action Summary</b>	<b>Application No.</b> 10/594,596	<b>Applicant(s)</b> OHMI ET AL.	
	<b>Examiner</b> ANDREW BOWMAN	<b>Art Unit</b> 1711	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 13 January 2009.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-23 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>1/13/09, 12/28/06, 9/28/06</u> | 6) <input type="checkbox"/> Other: _____  |

### DETAILED ACTION

Claims 1-23 remain pending in the current application.

#### ***Claim Rejections - 35 USC § 102***

a. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

b. (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1, 2, 4, 5, 13, 14, 16, 17, and 19-23 are rejected under 35 U.S.C. 102(b) as being anticipated by Georger, Jr. (US5853953).

c. Regarding claims 1, 2, 4, and 21, Georger, Jr. teaches methods used to manufacture circuit boards (column 12, lines 22-32) using a resin coating mixture (abstract) wherein the resin is coated onto a silicon or glass substrate and dried (column 12, lines 33-35), exposed (column 12, lines 42-48) and developed (column 13, lines 2-11) including a preferable heat hardening step (column 9, lines 20-27), and exposing the substrate and film to a fluorine gas atmosphere (column 13, lines 2-11).

d. Regarding claim 5, it is the position of the examiner that although Georger, Jr. does not expressly state the numerical value of the current claims, Georger does teach that the photoresist is dried until it is tack free (column 12, lines 33-35). It is the position of the examiner that the coating of Georger would not be

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tack free if it contained more than the weight percentage of water of the current claims. Therefore it is the position of the examiner that the dried coating of Georger in the preferred embodiment inherently meets the limitations of the claims.

e. Regarding claims 13, 14, 16, and 17, it is the position of the examiner that it is implied that the steps of claims 13 and 14 are the next intended steps of the process by the stating "plating the areas bared of resist in accordance with procedures known in the art" (column 13, lines 2-11). It is known that the steps of claims 13 and 14 are the purpose of photoresists in "microelectronic substrates". Further when the plating occurred on areas bared of resist, then the resist and the electrical wiring would be on the same plane.

f. Regarding claims 19 and 20, Georger, Jr. further teaches multiple possible combinations of molecules that would result in the polymer resin being formed from alkali-soluble alicyclic olefin resin (column 4, line 64 through column 5, line 2 and a radiation sensitive component (column 9, lines 20-27).

g. Regarding claims 22 and 23, Georger, Jr. teaches wherein the device for use with his invention is a liquid-crystal display device (column 12, lines 22-32).

### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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4. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

5. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

6. Claims 3 and 6-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Georger, Jr. (US5853953).

- h. Regarding claim 3, the teachings of Georger, Jr. are as shown above. Georger, Jr. teaches all of the steps of the claims as shown above. However, Georger, Jr. fails to teach the specific order of the steps of the current claim. However, the court has determined that in the absence of a showing of unexpected and new results previously unattained, claims are not considered to

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be patentable over the prior art for reordering the steps of an already known process.

i. Regarding claim 6, the teachings of Georger, Jr. are as shown above.

Georger, Jr. is silent as to the water content of the fluorine gas of his invention.

However, 1) Georger, Jr. does not teach adding any water to his fluorine gas and

2) Georger, Jr. takes particular steps to avoid the presence of water in his

coating by performing a drying step. It would be in contrast of that step for

Georger, to add any water along with his fluorine gas. Further, if for some

unknown reason the gas of Georger, Jr. contained water, Georger, Jr. has

already shown that he specifically desires to remove solvent content from his

coating and as such it would be logical for him to take necessary steps to prevent

the deposition of any additional water on his coating. Therefore, it is the position

of the Examiner that if the fluorine gas of Georger Jr is not inherently free of

water, in the absence of criticality of the specific water content of the current

claims, it would be considered obvious for one of ordinary skill in the art to take

measures to alleviate all water content from the fluorine gas of Georger Jr in

order to make his coating "tack free."

j. Regarding claim 7, the teachings of Georger Jr are as shown above.

However, Georger Jr fails to teach wherein the heat hardening takes place in an

inert atmosphere. However, it is the position of the Examiner that in general, it is

known to perform operations, where atmospheric gasses may interfere with the

quality of a final product, in a non-reactive inert gas atmosphere. Additionally,

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the Examiner is taking official notice to inform the applicant that it is common industry practice to perform heating operations in an inert gas atmosphere to prevent oxidation etc. Therefore one of ordinary skill in the art would be motivated to perform the heating operation of Georger in an inert gas atmosphere to avoid contamination of the coating.

7. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Georger in view of Bui et al., US 4797178.

k. Regarding claim 9, the teachings of Georger are as shown above.

Georger fails to teach the use of an oxygen plasma treatment prior to the step of exposure to fluorine gas, however, Bui shows that it is well known in the manufacture of printed circuit boards to alternate the use of oxygen plasma with the use of a fluorine gas mixture (column 1, lines 26-30), and it is shown by him to increase the etch rate of organic polymers. Therefore, one of ordinary skill in the art would be motivated to use the oxygen/fluorine gas mixture of Bui in the method of Georger in order to increase the etch rate.

8. Claims 10-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Georger in view of Aoyama, US 5630904.

l. Regarding claims 10-12, the teachings of Georger are shown above.

Georger fails to teach contacting the substrate with hydrofluoric acid based chemical solution after the use of fluorine gas. However, Aoyama shows that it is well known in the art of circuitry manufacturing to introduce a wafer to hydrofluoric acid with a concentration of 0.5-15% prior to exposing said wafer to

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a fluorine containing gas (col 3, lines 35-39; col 3, lines 66-col 4, line 5; example 1). Therefore, one of ordinary skill in the art would be motivated to perform the above stated method of Aoyama in conjunction with the circuit board manufacture method of Georger because it is suitable for such methods, as shown by Aoyama.

9. Claims 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Georger in view of Eckberg et al. (US5650453).

m. Regarding claim 8, the teachings of Georger are as shown above. Georger fails to teach wherein the resin film is subjected to ultraviolet radiation prior to exposure to fluorine gas. However, as shown above, Georger Jr does specifically teach that his coating is preferably radiation cured. However Eckberg shows that one of the most common forms of radiation used to cure radiation curable polymers is UV radiation. Therefore if Georger was not inherently using UV radiation as his radiation, it would have been obvious to one of ordinary skill in the art to utilize UV radiation of Eckberg to cure the materials of Georger because it is well known to be suited for such operations.

10. Claims 15 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Georger in view of Van Tongeren et al. (USPGPub 2002/0079832).

n. Regarding claims 15 and 18, the teachings of Georger are as shown above. Georger fails to teach wherein the filling occurs by inkjet printing or wherein a conductive material may contain an organic material. However, Van Tongeren teaches that it is known to deposit conductive layers of electronic



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devices onto relief patterned substrates (relief patterning of substrates is what is described by the lithography steps of Georger) wherein the conductive material contains organic material by inkjet printing ([0031], [0034], [0036], [0037], [0039], and [0040]). Therefore, one of ordinary skill in the art would consider it obvious to use inkjet printing method of Van Tongeren as the method to produce conductive patterns on the relief patterned substrates of Georger because the methods of Van Tongeren are shown to be suitable methods for producing circuit board wiring.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ANDREW BOWMAN whose telephone number is (571)270-5342. The examiner can normally be reached on Monday through Friday (7:30 to 5:00)EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Barr can be reached on 571-272-1414. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Michael Barr/  
Supervisory Patent Examiner, Art Unit 1711

Andrew J Bowman  
Examiner  
Art Unit 1711